Paper No. 10

TITLE: INFLUENCE OF SELECTED GROWTH MODIFIERS ON LEAF NICOTINE, PMI AND PMI-NICOTINE OF BURLEY TOBACCO

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ABSTRACT: Ky 14 burley tobacco was grown at Lexington, Ky following recommended culture practices. At or near normal topping time, growth modifiers were applied to evaluate alteration in leaf parameters of upper stalk air-cured leaf. Most treatments were applied immediately after topping and no sucker control material was used. Significant differences were observed among all parameters measured. In 1979 leaf nicotine levels ranged from 2.5 to 3.5% with fosamine and EL 72500 treatments at the high end of the range. Mefluidide and MBR 16349, 18337 and 19662 applications resulted in intermediate leaf nicotine levels. PMI values ranged from 181 to 216 mg/g and PMI-nicotine ranged from 8.7 to 10.8 mg/g with response to mefluidide and MBR compounds at the higher end of both PMI and PMI-nicotine ranges. However, mefluidide and MBR 16349 had the lowest PMI/PMI-nicotine ratio. In 1980 fosamine was applied prior to topping. Leaf nicotine was highest (4.3%) from fosamine application 4 days prior to topping and was lowest with MH application (3.2%). PMI-nicotine levels were highest with fosamine and chlorsulfuron and lowest with MH applications. PMI/PMI-nicotine ratios were highest with MH applications and tended to be lowest with fosamine, chlorsulfuron and mefluidide applications. Axillary bud development was least with MH application but also was low with fosamine applied prior to topping. In 1981 chlorsulfuron was applied with MH and plants were not topped. Chlorsulfuron treatments inhibited further top growth but upper leaves fell from the plants before maturity. Fosamine applied before topping inhibited axillary bud development and composition measurements were similar as in 1980. The growth modifiers used altered leaf parameters but generally acceptable physical and chemical characteristics of leaf were obtained.

REVIEW: This paper presented data from a study designed to alter the tobacco leaf chemistry while maintaining an acceptable appearance in the leaf material. Upper stalk air-cured leaf from Ky-14 tobacco grown under normal culture practices was used. The effects of different growth modifiers on the levels of leaf nicotine, PMI and PMI-nicotine applied at varying rates were evaluated. Results from the study indicated that the timing of the application influenced the plant response to the growth modifiers. The abstract contains the summarized results of the changes noted in the levels of nicotine, PMI and PMI-nicotine in the burley leaf. In conclusion, the study indicates that the leaf composition of burley tobacco can be modified while the physical parameters of the leaf remain acceptable. Therefore, the potential exists for altering the leaf chemical composition to obtain a different composition than that obtained with current culture practices.

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